

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 10/500,214 Confirmation No. : 2535  
First Named Inventor : Takuya SUGAWARA  
Filed : June 28, 2004  
TC/A.U. : 2823  
Examiner : Michelle Estrada  
Docket No. : 010986.55104US  
Customer No. : 23911  
Title : Substrate Treating Method and Production Method for Semiconductor Device

**INFORMATION DISCLOSURE STATEMENT  
UNDER 37 C.F.R. §§ 1.97 AND 1.98**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In accordance with the duty of disclosure under 37 C.F.R. § 1.56, the attached Form PTO-1449 lists documents which the Examiner may deem relevant to patentability of the claims of the above-identified application.

**I. Time Period of Submission**

This Information Disclosure Statement is submitted:

☐ 1) no later than three months from the application's filing date or 2) before the mailing date of the first Office Action on the merits (whichever is later), and therefore no statement under 37 C.F.R. § 1.97(e) or fee under 37 C.F.R. § 1.17(p) is required.

☒ 2) after the later of three months from the application's filing date and the mailing date of the first Office Action on the merits, but before a Final Office Action, a Notice of Allowance, or an action closing prosecution (*Ex parte Quayle*), (whichever is earlier), and therefore Applicant is filing concurrently herewith:

11/23/2005 JADD01 00000039 10500214

☐ a Statement under 37 C.F.R. § 1.97(e) or 180.00 OP

☒ a fee in the amount of \$180.00 under 37 C.F.R. § 1.17(p).

☐ 3) after either a Final Office Action or a Notice of Allowance, but before payment of the Issue Fee, and therefore Applicant is submitting herewith:

a Statement under 37 C.F.R. § 1.97(e); and

a fee in the amount of \$180.00 under 37 C.F.R. § 1.17(p).

II. Statement Under 37 C.F.R. § 1.97(e)

☐ I hereby state that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement; or

☐ I hereby state that no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to my knowledge after making a reasonable inquiry, no item of information contained in this Information Disclosure Statement was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this Information Disclosure Statement.

III. Submission of Non-English Language Documents

☒ The following is a concise explanation of relevance of the non-English language documents listed in the attached Form PTO-1449:

☒ The relevance of document(s) AA-AI to the subject matter of the present invention is/are provided in the specification of the above-identified application.

☐ Copy of a corresponding foreign or international report citing document(s) \_\_\_\_\_, together with an English-language version (if not already in English) of that portion of the report indicating the degree of relevance found by the foreign office.

☐ English language equivalent publication(s) of document(s) \_\_\_\_\_ is/are submitted herewith.

☐ English language abstract(s) is/are submitted for document(s) \_\_\_\_\_.

☐ English translation(s) of the foreign language document(s) \_\_\_\_\_ is/are submitted herewith.

☐ Applicant submits the following explanations:  
\_\_\_\_\_.

IV. Continuations/Divisionals/PCT National Stage Applications

☐ Documents \_\_\_\_\_ were previously submitted in an Information Disclosure Statement filed on == in parent application Serial No. \_\_\_\_\_, from which this application claims a benefit.


☐ Copies of the references listed on the attached form PTO-1449 have already been provided by the International Searching Authority, therefore, duplicate copies are not attached hereto.

The submission of the listed documents is not intended as an admission that any such document constitutes prior art against the claims of the present application. Applicant does not waive any right to take any action that would be appropriate to antedate or otherwise remove any listed document as a competent reference against the claims of the present application.

If necessary, this paper should be considered as an authorization to charge Deposit Account 05-1323, Attorney Docket No.: 010986.55104US, for the fee set forth in 37 C.F.R. § 1.17(p).

Respectfully submitted,

November 22, 2005

  
\_\_\_\_\_  
Jeffrey D. Sanok  
Registration No. 32,169

CROWELL & MORING LLP  
Intellectual Property Group  
P.O. Box 14300  
Washington, DC 20044-4300  
Telephone No.: (202) 624-2500  
Facsimile No.: (202) 628-8844  
JDS:lk



PTO/SB/08b (08-03)

Approved for use through 06/30/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

<b>Substitute for form 1449B/PTO</b>  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)		<b>Complete if Known</b>			
		Application Number	10/500,214		
		Filing Date	June 28, 2004		
		First Named Inventor	Takuya SUGAWARA		
		Art Unit	2812		
		Examiner Name	Francine Young		
Sheet	1	of	1	Attorney Docket Number	010986.55104US

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	AA	Y. AOKI, ET AL., "In Situ Substrate Surface Cleaning by Low-Energy Ion Bombardment for High Quality Thin Film Formation", J. Vac. Sci. Technol. A, March/April 1993, pp. 307-313, vol. 11 no. 2, American Vacuum Society	
	AB	KATSUYUKI SEKINE, ET AL., "Silicon Nitride Film Growth for Advanced Gate Dielectric at Low Temperature Employing High-Density and low-Energy Ion Bombardment", J. Vac. Sci. Technol. A, September/October 1999, pp. 3129-3133, vol. 17, No. 5, American Vacuum Society	
	AC	KOTARO MIYATANI, ET AL., "A New Plasma Dry Cleaning Method Applied to Contact and Gate Pre Cleaning", Extended Abstracts of the 2002 International Conference on Solid State Devices and Materials, 2002, pp. 196-197, Nagoya	
	AD	N. SANO, ET AL., "Improvement of SiO <sub>2</sub> /Si Interface by Low-Temperature Annealing in Wet Atmosphere", Appl. Phys. Lett., April 17, 1995, pp. 2107-2109, vol. 66, no. 16, American Institute of Physics	
	AE	D. TCHIKATILOV, ET AL., "Improvement of SiGe Oxide Grown by Electron Cyclotron Resonance Using H <sub>2</sub> O Vapor Annealing", Appl. Phys. Lett., October 21, 1996, pp. 2578-2580, vol. 69, no. 17, American Institute of Physics	
	AF	TAKUYA SUGAWARA, ET AL., "Characterization of Ultra Thin Oxynitride Formed by Radical Nitridation with Slot Plane Antenna Plasma", Extended Abstracts of the 2002 International Conference on Solid Devices and Materials, 2002, pp. 714-715, Nagoya	
	AG	AKIKO NARA, ET AL., "A Guideline for Accurate Two-Frequency Capacitance Measurement for ultra-Thin Gate Oxides", Extended Abstracts of the 2002 International Conference on Solid Devices and Materials, 2002, pp. 452-453, Sendai	
	AH	ATSUHIRO TSUKUNE, ET AL., "Cu Damascene Formation Process", The 8 <sup>th</sup> Semiconductor Process Symposium, September 20, 1999, pp. 71-79	
	AI	T. NGAL ET AL., "Improving SiO <sub>2</sub> /SiGe intface of SiGe p-metal-oxide-silicon field-effect transistors using water vapor annealing", March 11, 2002, pp. 1773-1775	

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.